



# SM358

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## Errata

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*This document lists all errors identified during previous presentations of the module. It will be added to as needed and a news message will be posted whenever an update is made.*

### Book 1

P.14 second paragraph after Eq. 1.7: the reference to Equation 1.6 should be to Equation 1.7.

P.75: In the last equation, drop the  $V_0$  symbol. The equation should then read

$$\Psi_n(x, t) = \sqrt{\frac{2}{L}} \sin\left(\frac{n\pi x}{L}\right) e^{-iE_nt/\hbar}.$$

Replace the line before this equation by: "we use Equation 3.24 with the new values of  $E_n$ , so". Please omit Exercise 3.8 at the top of P.76. (which is irrelevant once the equation at the bottom of p.75 is corrected).

P.80 Eq. 3.43: The limits on both the integrals should be between 0 and  $L$ . In the sentence immediately below the equation, replace the reference to Section 3.1.4 by one to Section 3.1.6, and replace  $\sqrt{L/2}$  by  $L/2$ . Equation 3.44 remains correct.

P.169 Exercise 6.9: Replace  $dx$  by  $dk$  in both the integrals.

P.189 Equation 7.23: Replace  $\delta x$  by  $\delta x, t$  in the final term on the right-hand side of the equation.

P.193 Eq. 7.39: Delete the 2 from the denominators of  $j_{\text{inc}}$  and  $j_{\text{trans}}$ .

P.201 lines 6 and 9 and caption of Figure 7.19: Replace  $|\psi^2|$  by  $|\psi|^2$ .

P.231 Exercise 8.14: Replace standard deviation by uncertainty.

### Book 2

P.22 line 6: Replace 'norm' by 'square of norm'.

P.42: In line 5 of the first paragraph of Section 2.1.2, and in line 3 of the following paragraph, insert 'of symmetry' after fixed axis.

P.57 line 5 up: delete the word 'to' in the phrase 'do not to commute'.

P.62: In each of the Equations 2.47, 2.49, 2.51 and 2.52 replace  $\frac{2}{r}$  by  $\frac{1}{r}$ .

P.64 Section 2.1 summary: The expression for  $L_z$  at the end of the first sentence should read:  $L_z = xp_y - yp_x$ .

P.81: In line 5 it should say 'The matrices representing  $S_x$  and  $S_y \dots$ '.

P.115: Just above Exercise 4.11, insert marginal note 'Put another way, for spinless bosons, the spin function is the identity function, which is symmetric.'

P.118: In the boxed statement of Born's rule for identical particles make the following additions: after 'one particle' insert (artificially labelled 1) and after 'the other particle' insert (labelled 2). In the marginal note next to the box, omit the sentence starting 'Notice the subtle ...' and replace with 'As explained on p.108 the labelling is purely for book-keeping purposes.'

P.119 line 2: Replace  $(x_1 = x_2 = L/4)$  by  $(x_1 = x_2 = 0.30L$  and  $x_1 = x_2 = 0.70L)$ .

P.119: In paragraph 4 the electron singlet and triplet states are the wrong way round. Line 6 of paragraph 4 should refer to a singlet state and line 9 to a triplet state.

P.125 line 14: replace Eintein by Einstein.

P.153 second paragraph: For consistency with preceding words in the paragraph, replace  $S_y$  by  $S_z$  and  $\hat{S}_y$  by  $\hat{S}_z$  (a total of four changes).

P.154 lines 13 and 14:  $\phi_R$  and  $\phi_T$  should be interchanged.

P.166: Equations 6.27 apply if the directions associated with  $|H\rangle$  and  $|V\rangle$  (in that order) are related to the direction of motion of the photon by the right-hand rule. In the opposite case, where  $|H\rangle$  and  $|V\rangle$  are related to the direction of motion of the photon by the corresponding left-hand rule,  $|H\rangle$  in both equations should be replaced by  $-|H\rangle$ . This detail will not be assessed, but is included here for the sake of completeness.

P.184 heading of Section 7.2.3 and marginal note: Eckert is more correctly spelt as Ekert.

P.236 Solution to Exercise 4.14: In the expression for the singlet state replace  $\frac{1}{2}$  by  $\frac{1}{\sqrt{2}}$ .

## Book 3

P.121: In the equation at the top of the page replace  $E_{gs}^{(1)}$  by  $E_{gs}$ .

P.159 Figure 6.11: Each of the numbers on the vertical energy scale should be multiplied by a factor of 10.

P.165 line 18:  $M_S = 1$  should read  $M_S = -1$ .

P.181 line below Equation 7.17:  $V_j(r)$  should read  $V_j(\mathbf{r})$ .

P.189 Table 7.1: Replace meV by eV in both rows of the table.

## Additional Exercises for Book 1

P.4 Exercise 7.2 (line 3) and P.20 Solution to Exercise 7.2 (lines 3 and 4): replace  $\hbar^2$  by  $\pi^2\hbar^2$ .